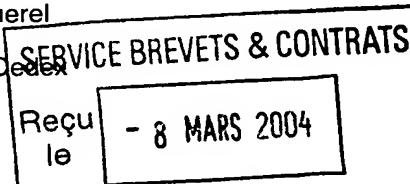


PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Hyden, Martin
ETUDES & PRODUCTIONS
SCHLUMBERGER
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Applicant's or agent's file reference
WO 21.1017

CPPOC - Clamart

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year) 04.03.2004

IMPORTANT NOTIFICATION

International application No. PCT/EP 02/14829	International filing date (day/month/year) 20.12.2002	Priority date (day/month/year) 02.01.2002
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Applicant
SERVICES PETROLIERS SCHLUMBERGER

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/B/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
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PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WO 21.1017	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 02/14829	International filing date (day/month/year) 20.12.2002	Priority date (day/month/year) 02.01.2002
International Patent Classification (IPC) or both national classification and IPC G01N33/18		
Applicant SERVICES PETROLIERS SCHLUMBERGER		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 16.07.2003	Date of completion of this report 04.03.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Joyce, D Telephone No. +31 70 340-3093



INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

International application No. PCT/EP 02/14829

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-11 as originally filed

Claims, Numbers

1-11 as originally filed

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 02/14829

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-11
Industrial applicability (IA)	Yes: Claims	
	No: Claims	1-11

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

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Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1:US-A-6 158 276 (BELSHAW DOUGLAS JAMES ET AL) 12 December 2000 (2000-12-12)

D2:US-A-2 733 201 (THOMPSON H. V) 31 January 1956 (1956-01-31)

Document D2 was not cited in the international search-report.

1. Inventivity Article 33(3) PCT

A salinity monitoring device for a well including a casing (D1 Col 1 line 50-51) the device being housed in the casing and comprising an electrical cable having a sheath containing a plurality of conducting wires (Col 4 line 35-37 and Fig: #5) one end of each wire being connected to an electrode and the other end of each wire being electrically coupled either to a measurement device or to an electrical current generator (Col 2 line 35-41) the housing includes apertures distributed on the major portion of its length (Col 6 line 28-31) the spacing between electrodes is sufficiently large that electrical effect measured thereby are influenced by water surrounding the well beyond the casing (Col 7 line 21-24, Col 8 line 13-14).

The additional feature of the housing being formed from an electrically insulating material is a well known feature in the field of salinity measurements for water, and would be considered by the man skilled in the art to be an obvious design choice and the applicant is referred to document D2 (US 2,733,201) which clearly teaches (cf., Col 1 line 20-44) the use of a rugged protective electrically insulating housing for salinity measurements on water.

Considering the objective problem faced by the the application, i.e., to detect a salinity-front beyond the well casing, it is felt that the combination of D1 and D2 achieves this by providing a salinity probe from D1 for well casing salinity measurements which contains vertically separated measurement modules which can be the same modules

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP02/14829

i.e., achieving multiple similar electrodes which are sufficiently spaced from each other (cf D1 Col 7 line 21-24), combined with the salinity probe of D2 (cf., D2 Col 2 line 46-51) including an electrically insulating housing, which (cf., D2 Col 2 line 53-57) provides electrodes which are widely spaced apart, the resulting measurement will contain current lines passing through the water via the slots which put the well in communication with the water outside the well.

Dependent claims 2-10 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step.

Further, independent claim 11 is directed to a method for measuring salinity of water in an underground formation, and though referring back to apparatus claims 1-9, is an independent claim of different category. As such it must include all essential features, in particular those features which render the method specifically adapted to perform salinity measurements using the device of claims 1-9.